BOSCH
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FLM-420-I2 Input Interface Modules

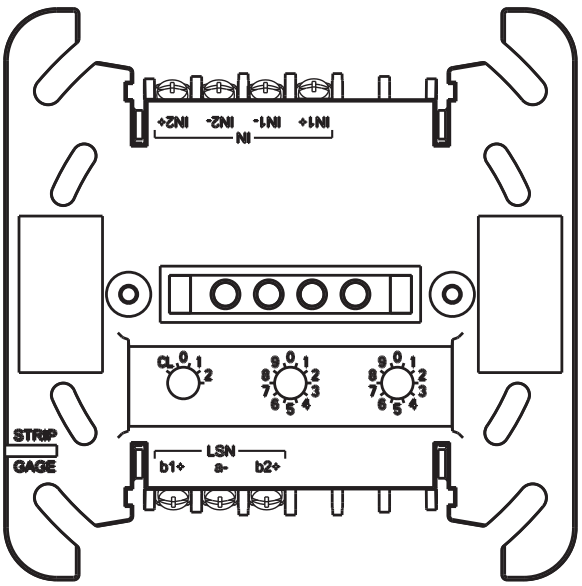
- **Line monitoring when operating with EOL resistor**
- **Contact monitoring**
- **Voltage monitoring**
- **Individual monitoring of the two inputs**
- **Maintains LSN loop functions in the event of wire interruption or short-circuit thanks to two integrated isolators**

The FLM-420-I2 Input Interface Modules monitor up to two inputs.

They are 2-wire LSN elements for connection to the Local SecurityNetwork LSN improved version with the enhanced functionality.

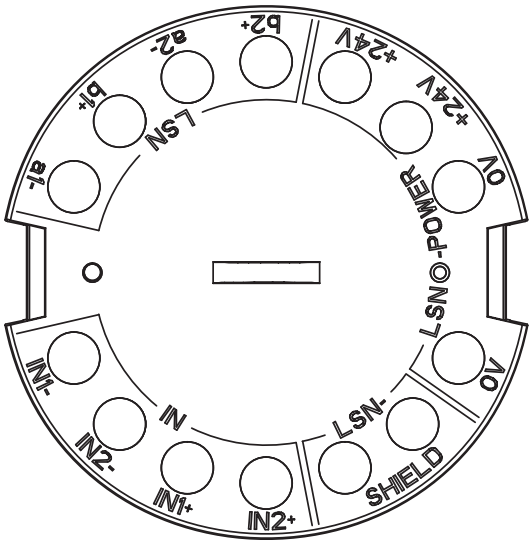
System Overview

FLM-420-I2-D



Description	Connection
IN1+ | IN1-	Input 1
IN2+ | IN2-	Input 2
LSN b1+ | a- | b2+	LSN (in/out)

FLM-420-I2-E / FLM-420-I2-W



Description	Connection
IN1- | IN1+	Input 1
IN2- | IN2+	Input 2
LSN-SHIELD	Shielding cable (if available)
LSN POWER 0 V | 0 V | +24 V | +24 V	LSN power supply (supports for looping through)
LSN a1- | b1+ | a2- | b2+	LSN (in/out)

Functions

Monitoring functions

The FLM-420-I2 Input Interface Modules offer three monitoring functions:

1. Monitoring of a line with EOL resistor
2. Monitoring of a potential-free contact
3. Voltage monitoring

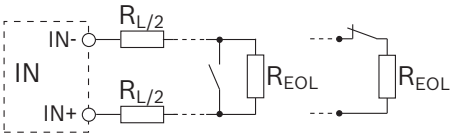
The monitoring functions can be selected for the two inputs individually by address setting via the programming software.

Line monitoring with EOL resistor

Operation with EOL resistor can be programmed for each input individually. The standard EOL resistor is 3.9 kΩ.

The interface module detects

- Standby
- Triggering in the event of line interruption
- Triggering in the event of a short circuit.

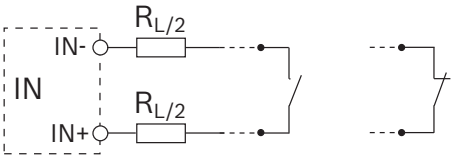


Position	Description
R_Σ	Overall line resistance with $R_\Sigma = R_{L/2} + R_{L/2} + R_{EOL}$
$R_{L/2}$	Line resistance

The following line conditions will be definitely detected if the overall line resistance is within the specified ranges:

Line condition	Overall line resistance R_Σ
Standby	1500 Ω to 6000 Ω
Interruption	> 12.000 Ω
Short circuit	< 800 Ω

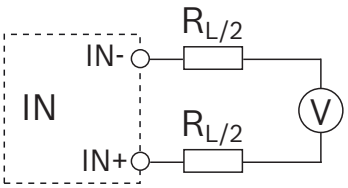
Contact monitoring



Position	Description
$R_{L/2}$	Line resistance with $R_{L/2} + R_{L/2} \leq 50\ \Omega$

The interface module evaluates the operating conditions "open" or "closed". The normal operating condition can be programmed for each input. Contact monitoring is carried out with a pulse intensity of 8 mA. The module detects signals from a duration of 300 ms.

Voltage monitoring



Position	Description
$R_{L/2}$	Line resistance with $R_{L/2} + R_{L/2} \leq 50\ \Omega$

Voltage monitoring is carried out between 0 V DC and 30 V DC. The programming software can be used to select two threshold values.

Address switches

The addresses of the interface modules are set using:

- DIP switches for FLM-420-I2-E and FLM-420-I2-W
- Rotary switches for FLM-420-I2-D.

In improved version LSN mode, the operator can select automatic or manual addressing with or without auto-detection.

Technical Specifications

Electrical

LSN	
• LSN input voltage	15 V DC to 33 V DC
• Max. current consumption from LSN	10.4 mA
Inputs	2, independent of each other
Line monitoring with EOL	
• EOL resistor	Nominal 3.9 kΩ
• Overall line resistance	• During standby: 1500 to 6000 Ω • Interruption: > 12.000 Ω • Short circuit: < 800 Ω
Contact monitoring	
• Max. current (current peak)	8 mA
Voltage monitoring	
• Voltage range	0 to 30 V DC
• Input resistance	≥ 50 kΩ
• Selectable threshold values	• 0.8 V DC (± 0.3 V DC) • 3.3 V DC (± 0.3 V DC) • 10.2 V DC (± 0.5 V DC) • 21.2 V DC (± 0.5 V DC)

Environmental conditions

Permitted operating temperature	-20 °C to +65 °C
Permitted storage temperature	-25 °C to +80 °C
Permitted rel. humidity	< 96% (non-condensing)
Classes of equipment as per IEC 60950	Class III equipment
Protection class as per IEC 60529	IP 30

Region	Certification	
Germany	VdS	G 207076 FLM-420-I2-D; FLM-420-I2-E; FLM-420-I2-W
Europe	CE	FLM-420-I2-W/-E
		FLM-420-I2-D
	CPD	0786-CPD-20288 FLM-420-I2-D
		0786-CPD-20287 FLM-420-I2-W, -E
	MOE	UA1.016-0070269-11 FLM-420-I2-W_FLM-420-I2-E_FLM-420-I2-D

Installation/Configuration Notes

- Can be connected to the fire panels FPA-5000 and FPA-1200.
- Programming is done with the programming software of the fire panel.
- The LSN connection is established via the two wires on the LSN line.
- A maximum cable length of 3 m is permitted per input.
- When mounting the in-built type interface module below a switch, a minimum depth of the device box of 60 mm is recommended.
- The in-built (-E) and wall-mount (-W) versions are fitted with terminals to allow a second wire pair to be looped through to the LSN power supply of subsequent elements.

Contact monitoring	
• Max. current (current peak)	8 mA
Voltage monitoring	
• Voltage range	0 to 30 V DC
• Input resistance	≥ 50 kΩ
• Selectable threshold values	• 0.8 V DC (± 0.3 V DC) • 3.3 V DC (± 0.3 V DC) • 10.2 V DC (± 0.5 V DC) • 21.2 V DC (± 0.5 V DC)

Mechanical

Connections	
• FLM-420-I2-E / W	14 screw terminals
• FLM-420-I2-D	7 screw terminals
Permitted wire cross-section	
• FLM-420-I2-E / W	0.6 to 2.0 mm^2
• FLM-420-I2-D	0.6 to 3.3 mm^2
Address setting	
• FLM-420-I2-E / W	8 DIP switches
• FLM-420-I2-D	3 rotary switches
Housing material	
• FLM-420-I2-E / W	ABS/PC blend
• FLM-420-I2-D with adapter	PPO (Noryl)
Color	
• FLM-420-I2-E / W	Signal white, RAL 9003
• FLM-420-I2-D with adapter	Off-white, similar to RAL 9002
Dimensions	
• FLM-420-I2-E	Approx. 50 mm x 22 mm (Ø x H)
• FLM-420-I2-W	Approx. 76 mm x 30 mm (Ø x H)
• FLM-420-I2-D with adapter	Approx. 110 x 110 x 48 mm (W x H x D)
Weight	Without / with packaging
• FLM-420-I2-E	Approx. 35 g / 130 g
• FLM-420-I2-W	Approx. 55 g / 155 g
• FLM-420-I2-D	Approx. 150 g / 235 g

Environmental conditions

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Permitted rel. humidity	< 96% (non-condensing)
Classes of equipment as per IEC 60950	Class III equipment
Protection class as per IEC 60529	IP 30

System limiting values

Max. cable length per input	3 m